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10/667,842	09/22/2003	Julian Tyrell	DS03-016	1029

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EXAMINER

ABDIN, SHAHEDA A

ART UNIT	PAPER NUMBER
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2629

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02/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/667,842

Applicant(s)

TYRELL, JULIAN

Examiner

Shaheda A. Abdin

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/22/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12-22-03, 4-15-04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claims 1-22 are objected to because of the following informalities:

In claim 1, line 9, the limitation "said modified data" recited, changing it to "a modified data", because modified data was not recite before.

In claim 1, line 14, "a display RAM" recited, changing it to "the display RAM", because display RAM recited before. This reads claim language better.

Appropriate correction is required.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

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351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 4-7, 9-10, 16-17, and 19-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US Pub. No: 2003/0222839 A1).

(1) Regarding claim 1:

Lee discloses (in Fig. 1) a system to adjust colors (i.e. correct RGB) in any kind of electronic display (e.g. LCD) comprising: a

color screen (i.e. 400) used as a display using primary colors (RGB) of a color space ((also see [0046]));

a system processor (i.e. external graphic controller) sending downloading display data (i.e. RGB data) to a display driver circuit (i.e. the elements 100) (see the illustration in Fig. 1) (also see [0046-0049]);

a display driver circuit (100) comprising:

a processor interface logic (i.e. logic circuit) providing the interface between said system processor (external graphic controller) and said display driver circuit (note that the source data RGB is supplied from the external graphic controller to the data driver (200) through a controller 100, and using logic flow for obtaining ACC data) (also see [0078] and [0084]);

a display adjust circuit (i.e. 500) adjusting (i.e. correcting) the display data (i.e. n bits RGB) received from said system processor (external graphic controller) via said processor interface logic (i.e. logic circuit) and writing said modified display data (i.e. m date) into a display RAM ([0084]) (note that the color correction unit 500 modulates

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display data RGB and registered m bits data by using look up table) ([0053]-[0054],

Fig. 1 and 2);

one or more color adjust registers (e.g. LUT) [0054];

a display RAM (i.e. volatile RAM) for storing the adjusted display data (i.e. ACC data)([0021] and [0046]);

and a screen driver controlling (i.e. 200) said screen (i.e. 400) and sending said adjusted display data (i.e. ACC data) to said screen (i.e. 400) ([0054], [0066]).

(2) Regarding claims 2:

Lee teaches said color space is RGB ([0046]).

(3) Regarding claim 4:

Lee teaches said screen (i.e. 400) is a LCD display ([0045]).

(4) Regarding claims 5 and 6 :

Lee teaches said LCD display (i.e. 400) is a CSTN display (note that CSTN, DS TN is sent a LCD display and well known in the art) ([0045]).

(5) Regarding claim 7:

Lee teaches said screen is a TFT display (note that LCDs using thin film transistors ("TFTs") as switching elements is well known ,[0005]).

(6) Regarding claim 9:

Lee teaches wherein said display adjust circuit (i.e. 500) is using two

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color adjust registers (i.e. LUT tables for m bits RGB) to store the adjustment data (i.e. ACC data) defining the amount of adjustments (i.e. amount is defined by the equation 1 to 3) [0076-0081] and [0094]).

(7) Regarding claim 10:

Lee teaches wherein said color adjustment registers (i.e. LUT's) are storing the adjustment data (i.e. m bits data) for each of all primary colors (i.e. RGB) of the color space selected ([0046], and Fig. 2).

(8) Regarding claim 16:

Lee teaches the color display data (i.e. RGB) is linearly scaled by programmable amount [0026], [0091].

(9) Regarding claim 17:

Lee teaches wherein the display data are adjusted for each color according equations which are implemented in said display adjust circuit using a hardware description language ([0026], [0091]).

(10) Regarding claim 19:

Lee teaches each primary color (RGB) of the color display data is linearly scaled by programmable amount (i.e. equation 1 and 2) [0077] and wherein said programmable amount is defined in case of a required decrease of a primary color according to the equation $\text{color}_{\text{adjust}} = \text{color}_{\text{unadjust}} - \text{color}_{\text{unadjust}} / 2^n$ wherein $\text{color}_{\text{adjust}}$ is the value of the adjusted color, $\text{color}_{\text{unadjust}}$ is the value of unadjusted color, and n is a

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parameter set for each primary color according to the desired adjustment ([0077], [0091]) (note that RGB corrected image data i.e. ACC data is interpreted as color_{adjust}; the ACC data is equal to the RGB source image data [0049-0050], which is similar to claim limitation color_{adjust} = color_{unadjust}, because n is arbitrary and depends on desired adjustment can be set to '0', moreover, equation 1 and 2 define the ACC data) (see [0077]).

(11) Regarding claim 20:

Lee teaches wherein each primary color (i.e. RGB) of the color display data is linearly scaled by programmable amount and wherein said programmable amount is defined in case of a required increase of a primary color [0077] according to the equation $\text{color}_{\text{adjust}} = \text{color}_{\text{unadjust}} + \text{color}_{\text{unadjust}} / 2^n$ wherein color_{adjust} is the value of the adjusted color, color_{unadjust} is the value of unadjusted color, and n is a parameter set for each primary color according to the desired adjustment (note that n is arbitrary and depends on desired adjustment, therefore the equation $\text{color}_{\text{adjust}} = \text{color}_{\text{unadjust}}$ which is equivalent to ACC data and ACC data equal to source data RGB) (also see the discussion in claim 19)

(12) Regarding claims 21 and 22:

Lee teaches a display driver (display driver for panel 400) implemented in IC (i.e. ASIC) ([0084] and [0090]). Thus the references of Lee and Lee meet the claim limitations.

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(13) Regarding claim 23:

A method to adjust colors (correct color (RGB) in any kind of electronic display (LCD) comprising:

providing a display screen (i.e. 400), a system processor (i.e. external graphic controller), and a display driver circuit (i.e. 100) comprising a processor interface logic (i.e. i.e. logic circuit), a display adjust circuit (i.e. 500), one or more color adjust registers (i.e. look up table), a display RAM (i.e. volatile RAM) and a screen driver circuit (i.e. data driver 200) (see the illustration in Fig. 1) (also see [0046]);

define adjustment data (ACC data) for each primary color (i.e. R, G, B) used by said display screen (400) to adjust said colors (i.e. RGB) according to the properties (e.g. characteristic, [0076]) of said screen (i.e. 400) ([0049]- [0054]).

store said adjustment data (i.e. ACC) for each primary color (RGB) in one or more registers (LUT) providing one or more bits (i.e. m bits) for each primary color (RGB) ([0053]-[0054], Fig. 1 and 2);

define a word structure (e.g. 10 bits) to operate the unadjusted display data (i.e. n data) and to store the adjusted display data (ACC data) in a display RAM wherein for each primary color a defined number of bits is assigned (i.e. m bits) ([0064-0070]);

implement an algorithm (i.e. calculation) to adjust each of the primary colors (RGB), used by said screen (i.e. 400), in said display adjust circuit (i.e. 500) using a hardware description language (note that the illustration in Fig. 8, ACC data calculated by logic operation as described in the step S501-S508) (also see [0078-0085];

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download display data (i.e. source data RGB) from system processor (i.e. external graphic controller), into display adjust circuit (i.e. 500) ([0046]);

adjust display data (correct n bits RGB) in display adjust circuit (i.e. 500) according to algorithm (calculation) implemented earlier and according adjustment data defined and stored earlier and write adjusted display data into display RAM ([0021]);

and forward adjusted display data (i.e. R', G', B') from the display RAM to the display screen (400) by the screen driver circuit (i.e. 200) ([0054], [0066]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Kue et al. (US Pub No: 20030234756 A1).

(1) Regarding claim 3:

Note that Lee does not teach said color space is CMY.

However, Kue in the same field of endeavor teaches that not only red, green and blue, classes are known, but that Cyan, Magenta, and Yellow color are known also ([0044-0045]).

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Therefore, It would have been obvious to a person of ordinary skill in the art at the time of invention to utilize CMY as taught by Kue in to the RGB display device of Lee because Kue explicitly teaches that these color classes can be changed or adjusted (Kue, [0045]).

(2) Regarding claim 25:

Note that claim 25 is similar to claims 3. The only limitation of claim 25 is differed from claim 3 is method claim.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Bergstrom (US Patent No: 6801213).

(8) Regarding claim 8:

Note that Lee does not teach said screen is an OLED display.

However, Bergstrom in the same field of endeavor teaches the screen is a OLED display (column 33, lines 33-43) as an alternate to an LCD display.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate the method of OLED as taught by Bergstrom for the LCD display device of Lee so that the screen could an OLED display. In this configuration the system would avoid flicker in the display device (Bergstrom, [(column 33, lines 33-43)).

8. Claims 11-12, 32-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Cowlshaw (US patent No: 4725828).

(1) Regarding claim 11:

Note that Lee teaches color adjustment registers but Lee does not teaches three bits to store the adjustment information for each of two primary colors and four bits for a third primary color.

However, Cowlshaw in the same field of endeavor teaches three bits to store the adjustment information for each of two primary colors (i.e. 3 bits for Red and Blue) and four bits for a third primary color (i.e. 4 bits per pel for the Green component) (column 6, lines 22-35)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate the method of adjusting bits to store information for primary color as taught by Cowlshaw in to the display system of Lee so that the color adjustment register could be comprising three bits to store the adjustment information for each red color and blue color and four bits for green color. In this configuration the system would have substantial savings in storage in high quality image processing and graphics systems in the display device (Cowlshaw, column 1, lines 63-68).

(2) Regarding claim 12:

Note that the limitations of claim 12 is similar to claim 11, see the discussion in Claim 11.

(3) Regarding claims 32-33:

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Note that claims 32- 33 are similar to claims 11-12 respectively. The only limitation of claims 32-33 differed from claims 11-12 is method claim.

(4) Regarding claim 34:

Note that Lee and Cowlshaw does not teach the specific percentages recited in claim 34.

However, the limitations in claim 34 does not define a patentably distinct invention over that in "Lee" since the inventions as a whole and Lee are directed to adjusting the data for the color RGB. Therefore, it would have been obvious to a person of ordinary skill in the art to utilize a distribution of color bits for the adjustment of data for red such as bit shifting and adding or bit shifting and subtracting because modification of data depends on desired adjustment bases on user preference. In this configuration the system would provide effectively correct color balance in the display device.

(2) Regarding claims 35 and 36:

Note that claims 35-36 are rejected on the basis of same discussion as applied to claim 34 above for the colors blue and green (see the discussion in claim 34).

9. Claims 13-15, 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Relnert (US Patent No: 5488390).

(1) Regarding claim 13:

Note that Lee does not teach said display data are stored in said display RAM using a 16-bit word.

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However, Reinert in the same of endeavor teaches display data are stored in in the display RAM using a 16-bit word (column 3, lines 58-67)

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate the method of 16-word as taught by Reinert in to the display system of Lee so that the display data could be stored 16-bits in the display RAM of the display. In this configuration the system would provide convenient and easy to drive display with improve image (Reinert column 3, lines 58-67).

(2) Regarding claim 14:

Reinert teaches said 16-bit word comprises five bits each for two primary colors (i.e. R,B) and six bits for a third primary color (i.e. G) (column 3, lines 58-67).

(3) Regarding claim 15:

Note that the limitation of claim 15 is similar to claim 14. See the discussion in claim 14.

(4) Regarding claims 26 -28:

Note that claims 6-28 are similar to claims 13-15 respectively. The only limitation of claims 26-28 differed from claims 13-15 is method claim.

10. Claims 18, 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Challier (US Patent No: 6199031).

(1) Regarding claim 18:

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Note that Lee teaches the display data (i.e. RGB) are adjusted for each color according equations (i.e. equation 4 to 6, column 6, lines 51-67) which are implemented in said display adjust circuit (i.e. 53) (column 9, lines 50-59), but both Lee and Lee does not teach register transfer level (RTL) language. Note that register transfer language is well known in the art.

However Challier in the same field of endeavor teaches register transfer language (RTL) (column 8, lines 15-32).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate the method of register transfer language into the display device of Lee so that display data could be adjusted for each color according to equations which could be implemented in the display adjust circuit by RTL language. In this configuration the system would provide a high, proficiency data transmission in the display device (Challier, column 1, lines 5-10).

(2) Regarding claims 29 -31:

Note that claims 29 –31 are similar to claims 18-20 respectively. The only limitation of claims 29-31 differed from claims 18-20 is method claim.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's discloser. Ham (US Patent No: 7034786) discloses a color-correction method and apparatus for liquid crystal display.

Inquiry

12. Any inquiry concerning this communication should be directed to the examiner at (571) 270-1673 Monday- Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached at (571) 272-7691.

Information regarding the status on an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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Any response to this action should be mailed to:

Commissioner of patents and trademarks
Washington, D.C. 20231

Or fax to:

(703)872-9314 (for Technology Center 2600 only)

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